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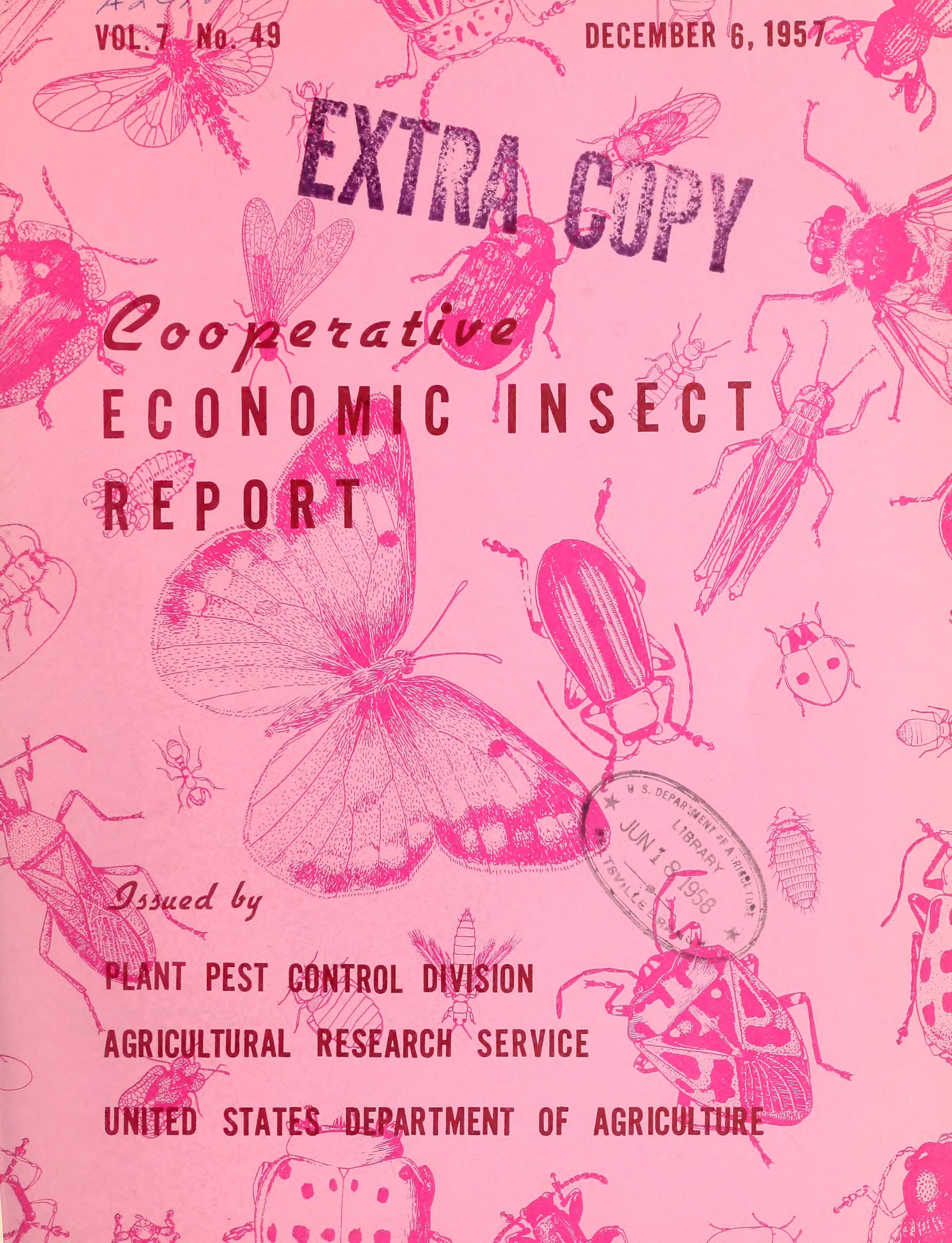

VOL. 7 No. 49

DECEMBER 6, 1957

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Cooperative ECONOMIC INSECT REPORT

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PLANT PEST CONTROL DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

PLANT PEST SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Plant Pest Survey Section
Plant Pest Control Division
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Volume 7 December 6, 1957 Number 49

COOPERATIVE ECONOMIC INSECT REPORT

Highlights of Insect Conditions

PINK BOLLWORM infestation unusually heavy in area of Graham County, Arizona. (p. 908).

CATTLE GRUBS appearing in 10-15 percent of cattle in central Oklahoma. (p. 908).

Spread of BOLL WEEVIL in the United States (map). (p. 910).

SUMMARY OF INSECT CONDITIONS - 1957 - in Delaware. (p. 911).

BEET LEAFHOPPER population in Nevada, Utah and western Colorado - 1957. (p.915).

Insects not known to occur in the United States. (p. 917).

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Reports in this issue are for the week ending November 29 unless otherwise designated.

WEATHER BUREAU 30-DAY OUTLOOK

DECEMBER 1957

The Weather Bureau's 30-day outlook for December calls for temperatures to average above seasonal normals east of the Appalachians and also in the Great Lakes Region. Below normal temperatures are expected to prevail west of the Mississippi River except for near normal along the West Coast and the northern border. In unspecified areas near normal is predicted. Precipitation is expected to exceed normal east of the Mississippi except for near normal amounts in New England. Subnormal precipitation is indicated west of the Continental Divide. In the remainder of the country near normal amounts are in prospect.

Weather forecast given here is based on the official 30-day "Resume and Outlook", published twice a month by the Weather Bureau. You can subscribe through Superintendent of Documents, Washington 25, D. C. Price $4.80 a year, $2.40 a half year.

WEATHER OF THE WEEK ENDING DECEMBER 2

A cold air mass overspread the Far West soon after the beginning of the period and pushed to the Appalachians by the 28th. Southerly winds in advance of this eastward moving air mass brought unseasonably high temperatures to central areas, setting a late season high of 69° for Grand Island, Nebr., and melting much of the snow cover accumulated in some areas the previous week. A second surge of cold air from the Far West on the 29th pushed across the entire country by the end of the period, reducing temperatures to freezing or below southernward to many points along the Gulf coast and central Florida. Also, it was preceded and accompanied by light snow in northern areas and light rain or snow in middle areas from the Rockies to the Appalachians. East of the Appalachians precipitation (rain in the south and snow in the north) was general the last 3 days of the period. High winds occurred along the cold front, causing widespread minor damage in Mississippi, Louisiana, and New England. Southerly winds preceding the front brought unusually high temperatures to the Northeast on the 29th when Boston, Mass., recorded a record high of 65° for the date. The high temperatures in the Northeast followed a cold snap there on the 26th and 27th when minima of 10° were recorded at many interior stations. Precipitation for the week generally was very light west of the Appalachians, except for some moderately heavy amounts along the north Pacific coast. East of the Appalachians, totals generally exceeded an inch in the Carolinas and an inch from Georgia northward. The heavier amounts in the Carolinas resulted mainly from heavy rains at the beginning of the period. The precipitation along the north Atlantic coast further replenished soil moisture depleted by last summer's drought and greatly helped relieve the water shortage of many wells and reservoirs. On December 1 and 2, heavy snow fell in western New York along Lake Ontario, and on the western slopes of the Adirondacks where up to 12-inch depths were measured on the 2d. In central areas, snow cover is mainly limited to northern portions of Michigan, Wisconsin, and Minnesota, with depths ranging from 3 to 6 inches. In the Far West, snow depths in the northern Cascades ranged between 2 and 3 feet at elevations above 5,000 feet. Temperatures for the week averaged slightly below normal in New York, New England, and Wisconsin, well below in the Far Southwest, and above elsewhere. Greatest departures ranged from 9° above normal in northeastern Montana to 6° below in parts of Texas and the central Great Basin of the Far West.

(Summary supplied by U. S. Weather Bureau)

CEREAL AND FORAGE INSECTS

CHINCH BUG (*Blissus leucopterus*) - OKLAHOMA - Preliminary hibernation rating very severe in Payne County. Overwintering bugs averaged 3,734 per square foot. (Coppock).

EUROPEAN CORN BORER (*Pyrausta nubilalis*) - ARKANSAS - Found in Searcy County for first time. (Whitcomb, Wall). Previously found in all surrounding counties. Pest has crossed the entire State from north to south in 8 years. (Boyer).

SOUTHWESTERN CORN BORER (*Zeadiatraea grandiosella*) - ARKANSAS - Found in Lee, Stone and St. Francis Counties for first time. (Boyer, Whitcomb, Wall). Pest has now reached extreme eastern area of State, joining the Mississippi River. In eight years, pest has crossed the State. (Boyer, Nov. 25).

SOUTHERN CORNSTALK BORER (*Diatraea crambidoides*) - NORTH CAROLINA - High percentage of corn crop infested in Nash County, November 15. (Cox, Farrier).

FALL ARMYWORM (*Laphygma frugiperda*) - UTAH - Infesting corn tassels at Willard, August 8. (Dorst).

WHITE GRUBS - SOUTH CAROLINA - A 40 acre field of fescue damaged in Dillon County. Counts from 200,000 to 500,000 per acre. Two acres of pasture damaged in Sumter County. (Nettles et al.). NORTH CAROLINA - Larvae of *Cotinis nitida* causing severe damage to tall fescue in field in Polk County. (Culberson, Farrier).

SPOTTED ALFALFA APHID (*Therioaphis maculata*) - OKLAHOMA - Numbers extremely low is alfalfa fields in Payne and Noble Counties. None found in majority of fields surveyed. (Coppock). NEVADA - Found in 4 field near Minden, Douglas County. First record for county. (Bechtel, Marshall, Roberts).

ALFALFA CATERPILLAR (*Colias philodice eurytheme*) - OKLAHOMA - Found in scattered fields in north central area, generally 0 to 4 per 10 sweeps. (Coppock).

SPOTTED CUCUMBER BEETLE (*Diabrotica undecimpunctata howardi*) - OKLAHOMA - Present in 11 alfalfa fields in Payne and Noble Counties; averaging 1 to 7 per 10 sweeps. (Coppock).

TARNISHED PLANT BUG (*Lygus lineolaris*) - OKLAHOMA - Congregating in alfalfa fields in Payne and Noble Counties. Counts from 11 to 25 adults per 10 sweeps. (Coppock).

THREE-CORNERED ALFALFA HOPPER (*Spissistilus festinus*) - OKLAHOMA - Rarely found in alfalfa in Payne and Noble Counties. (Coppock).

TRUCK CROP INSECTS

BEET LEAFHOPPER (*Circulifer tenellus*) - NEVADA - Populations per square foot of beet row on sugar beet seedlings on October 3 were as follows: Alamo, Lincoln County - 2.0; Logandale, Clark County - 2.0; Mesquite, Clark County - 1.2. Populations much higher than in 1956. Counts in November show incidence of curly top to be quite low. (Dorst).

A CHAFER(*Cyclocephala pasadenae*) - CALIFORNIA - Recorded from hop roots in Sacramento County. (Cal. Coop. Rept.).

GREEN PEACH APHID (*Myzus persicae*) - OKLAHOMA - Populations extremely low, less than 1 per plant on spinach at Bixby. (Walton). NORTH CAROLINA - Entire garden infested in Bladen County. Losses estimated at 30 percent to turnips and 70 percent to collards. (Morris, Farrier, Nov. 19).

SEED-CORN MAGGOT (*Hylemya cilicrura*) - OKLAHOMA - Twenty larvae per 100 spinach plants on foliage at Bixby, November 23. (Walton).

COTTON INSECTS

PINK BOLLWORM (Pectinophora gossypiella) - ARIZONA - Heaviest infestation to appear in recent years discovered in Solomon locality of Graham County, early in October. Numbers alarming compared to those found in area during 1956. Gin trash samples of infested fields disclosed 3 infested - 2 lightly and one heavy. Twenty bushels of trash examined from one Solomon gin revealed 260 pink bollworms. (PPC, West. Reg., Oct. Rept.). OKLAHOMA - Twenty-four lint cleaner and 10 gin stand inspections in 8 southern counties during week of November 12 to 19 yielded 60 larvae. Three counties negative. (Fed. State P.B.W. Comm.). CALIFORNIA - Boll survey continued in Imperial, Kings and Tulare Counties. No indications of infestation found. (Cal. Coop. Rept.).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

BLACK TURPENTINE BEETLE (Dendroctonus terebrans) - ARKANSAS - Some control and salvage cutting continues across southern area, however, generally reports indicate activity not considered serious. (Ark. For. Comm., Nov.1). VIRGINIA - D. terebrans and Platypus flavicornis severe on pine trees in Norfolk County on October 16. Det W. H. Anderson. (Morris, Woods).

IPS BEETLES - ARKANSAS - Definite drop in activity, generally, though considerable activity present in west central area of State. Further south at Amity, heavy mortality reported in logging areas. (Ark. For. Comm., Nov.1).

SAWFLIES (Neodiprion spp.) - ARKANSAS - Observations of infestations of a sawfly, probably Neodiprion excitans, made in Union County. Some trees completely defoliated in infestations from Smackover to Calion south to Louisiana State line. (Warren, Boyer). VIRGINIA - Larvae of N. lecontei feeding on pines in Appomattox County on October 15. Det. B. D. Burks. (Rowell, Smith).

PINE NEEDLE SCALE (Phenacaspis pinifoliae) - OREGON - Caused some concern by its abundance in Douglas-fir at city parks and other public areas near Salem. (Loring).

MIMOSA WEBWORM (Homadaula albizziae) - VIRGINIA - Heavy on mimosa tree at Callands on October 28. (Amos).

OLIVE SCALE (Parlatoria oleae) - CALIFORNIA - Heavy on privet hedge in Chico, Butte County. (Cal. Coop. Rept.).

INSECTS AFFECTING MAN AND ANIMALS

CATTLE GRUBS (Hypoderma spp.) - OKLAHOMA - Showing in backs of 10-15 percent of cattle in central area. (Howell).

A TICK (Ixodes pacificus) - OREGON - Removed from neck of girl by physician in Salem, November 26. (Goeden).

BENEFICAL INSECTS

NABIDS - OKLAHOMA - Fairly common in alfalfa in Payne and Noble Counties; averaging 2 to 6 per 10 sweeps. (Coppock).

MISCELLANEOUS INSECTS

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - FLORIDA - Collected at two different locations in Miami, Dade County, November 18. (Daigle, Butler). No extensions of significance reported during week ending November 22. (Bittner).

A DRIED FRUIT MOTH (*Vitula edmandsae serratilineella*) - CALIFORNIA - Heavy larval infestation in honey bee combs near Goleta, Santa Barbara County, feeding on stored pollen in combs. First record in county. (Cal. Coop. Rept.).

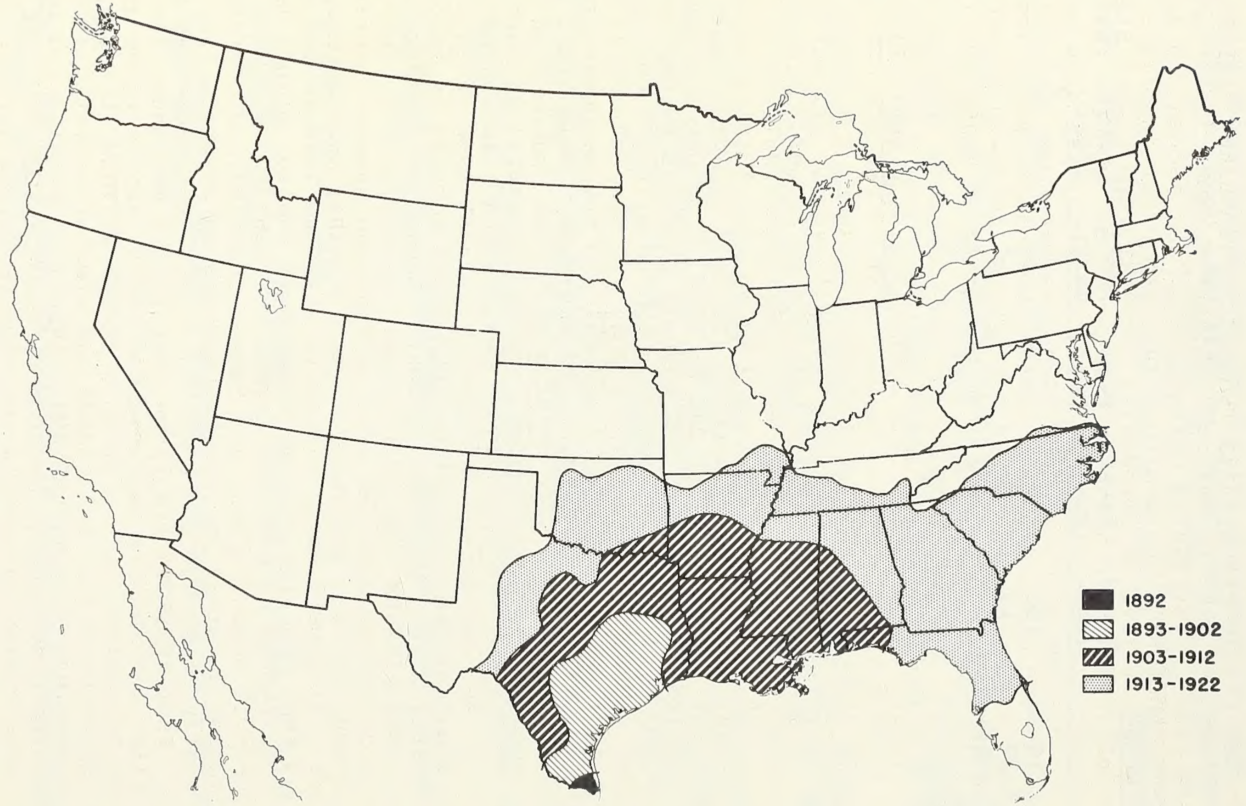
MILLIPEDES - OREGON - Large numbers invading homes at Salem, November 26. (Goeden).

TERMITES - UTAH - Several additional homes and buildings found infested in Summit, Kane, Millard, Washington, Weber, Cache and Salt Lake Counties.(Knowlton).

LIGHT TRAP COLLECTIONS

	Pseud. unip.	Agrot. yps.	Prod. orn.	Perid. marg.	Laphyg. frug.	Heliothis zea	Feltia subter.
ARKANSAS							
Fayetteville 11/16-22	151	21		1		20	
Stuttgart 11/14-20	13	9		8			
SOUTH CAROLINA (Counties)							
Oconee 11/23-29	1		1	3			1
Florence 11/23-29	3	1			1		7

SPREAD OF BOLL WEEVIL IN UNITED STATES



The insect had apparently reached area of general distribution by 1922.

Prepared in ARS, USDA, 1957

SUMMARY OF INSECT CONDITION - 1957

DELAWARE

Prepared by H. E. Milliron

Highlights: EUROPEAN CORN BORER greatly reduced. STRAWBERRY SPIDER MITE infestation of soybeans heaviest yet encountered. GARDEN WEBWORM more abundant than at any time in recent years. VELVETBEAN CATERPILLAR first recognized as a pest in Delaware. SOUTHERN CABBAGEWORM common on turnip and other crucifers late in season. SPRUCE SPIDER MITE destructive on ornamental trees throughout the State. BLACK WIDOW SPIDER unusually common in northern Delaware. Other pests that were troublesome during the season included alfalfa weevil, grasshoppers, corn earworm, plant bugs, flea beetles, pea aphid, cucumber beetles, squash bugs, armyworm, two-spotted spider mite, European red mite, Japanese beetle, corn leaf aphid, leaf miners, sap beetles, mosquitoes, fall armyworm, green cloverworm, Colorado potato beetle, cabbage looper and imported cabbageworm. No new pests of major importance were encountered.

Cereal and Forage Insects: EUROPEAN CORN BORER (*Pyrausta nubilalis*) - The 1957 spring survey data indicated population reduction of 32 percent during previous winter from combined effects of adverse weather, diseases, bird feeding, insect parasites and mechanical injury. Pupation was well over 50 percent in Sussex County by the third week of April. An organized campaign to properly dispose of plant remnants further aided in reducing this pest. The first adults were noted in Sussex County, April 29. The drought, from June to late August, was credited with the elimination of many early-instar larvae. The fall abundance survey averaged 90 borers per 100 plants, compared with 243 in 1956, a 63 percent reduction. Loss of corn for grain in 1957 was about 79,500 bushels (reduced 88 percent) valued at approximately $107,400 (reduced 87 percent), compared with 658,000 bushels valued at $849,000 in 1956. ALFALFA WEEVIL (*Hypera postica*) was moderately heavy in alfalfa throughout the season. It caused moderate to severe damage to untreated fields throughout the State from late April to mid-June. Only light injury was recorded subsequently. PEA APHID (*Macrosiphum pisi*) was numerous on alfalfa and clovers at most places early in the season, and light generally, thereafter. MEADOW SPITTLEBUG (*Philaenus leucophthalmus*) occurred on alfalfa and clovers in usual numbers without serious losses anywhere. ARMYWORM (*Pseudaletia unipuncta*) was somewhat more abundant and destructive than usual locally on timothy, cereals and field corn in early June. Moderate to heavy damage occurred to sweet corn in southern area. CORN EARWORM (*Heliothis zea*) was responsible for considerable damage to canning corn during June and July in Kent and Sussex Counties. The pest on field corn was about normal, generally,though somewhat more destructive than usual to sweet corn. It caused heavy losses to soybeans late in the season in parts of Sussex and Kent Counties, and required more control effort than in 1956. GREEN CLOVERWORM (*Plathypena scabra*) was normal throughout the season in alfalfa, clovers and all types of beans in Kent and Sussex Counties. VELVETBEAN CATERPILLAR (*Anticarsia gemmatalis*) occurred in economic numbers in soybeans from late September to late October, mostly in Sussex and Kent Counties; first record as an economic pest in the State. FALL ARMYWORM (*Laphygma frugiperda*) was unusually abundant and destructive, beginning mid-August, on field and sweet corn,,sorghum and cereals throughout southern two-thirds of the State. GARDEN WEBWORM (*Loxostege similalis*) was more abundant in weedy areas, grasslands and similar situations in August and September than any previous year since 1950. Injury to alfalfa was recorded at various places over the State during September. CLOVER ROOT CURCULIO (*Sitona hispidula*) adults were common in alfalfa and clovers during spring, late summer and fall; resulting in noticeable leaf injury. JAPANESE BEETLE (*Popillia japonica*) was destructive to alfalfa, clover, corn and soybeans in many places in Kent and Sussex Counties, June - August; less troublesome on these crops in New Castle County. DUSKY SAP BEETLE (*Carpophilus lugubris*) was somewhat less prevalent than in 1956. Injury was largely confined to canning and field corn. Infestations were numerous in sweet corn in late June in Kent and Sussex Counties. CORN FLEA BEETLE (*Chaetocnema pulicaria*) was normally as abundant and destructive as in 1956.

Adults were numerous on sweet corn in Sussex County, late April - early May, and in late plantings in Kent and New Castle County, late July - late August. GRASS THRIPS (*Anaphothrips obscurus*) was common on corn generally without causing serious injury. Average numbers POTATO LEAFHOPPER (*Empoasca fabae*) were encountered in alfalfa. Not heavy on soybeans at most locations. CORN LEAF APHID (*Rhopalosiphum maidis*) appeared first on corn about mid-July, Sussex County. Heavy infestations were common many places in the southern half of State in August, and later present in economic numbers on sorghum, Sudan grass and cereals, generally. Damage was heavier than in past several years. TARNISHED PLANT BUG (*Lygus lineolaris*) was more prevalent on forage legumes than usual. GRASSHOPPERS (principally *Melanoplus femur-rubrum*) were common to numerous locally in forage legumes and soybeans, especially in Kent and Sussex Counties. LONGHORNED GRASSHOPPERS (*Conocephalus brevipennis* and *C. fasciatus*) were numerous in alfalfa, June and July, southern New Castle, Kent and northern Sussex Counties. SPIDER MITES (*Tetranychus atlanticus* and *T. telarius*) - Former species was abundant and severely injured soybeans at many places in Kent and Sussex Counties during July and August. Latter species was light on soybeans at most locations, but severe on sweet corn locally throughout State during the same period.

Fruit Insects: APHIDS - *Rhopalosiphum fitchii* was common to numerous in neglected orchards generally, early April. *Anuraphis roseus* caused moderate injury where no treatments were applied, April - June. *Aphis pomi* was relatively unimportant until late June, then prevalent most locations. CODLING MOTH (*Carpocapsa pomonella*) was normal, except second generation , which was troublesome locally in untreated orchards. RED-BANDED LEAF ROLLER (*Argyrotaenia velutinana*) caused light foliage injury, most locations in Kent and Sussex Counties. ORIENTAL FRUIT MOTH (*Grapholitha molesta*) was generally light, except in peach branches and apple fruits, northern area. UNSPOTTED TENTIFORM LEAF MINER (*Callisto geminatella*) was less troublemsome than 1956 generally. Heavy locally in northern area. GRAPE BERRY MOTH (*Paralobesia viteana*) caused considerable loss in neglected New Castle County vineyards in mid-August. APPLE MAGGOT (*Rhagoletis pomonella*) was destructive in untreated orchards, northern Delaware, late July and August. STRAWBERRY WEEVIL (*Anthonomus signatus*) activity was about average. Some bud losses amounted to about 10 percent. PLUM CURCULIO (*Conotrachelus nenuphar*) was normal on peaches, generally, infested apples in Kent County during late May and early June, and was heavy in untreated plums, some places in New Castle County. EUROPEAN RED MITE (*Panonychus ulmi*) - First actives appeared about mid-April buildup was rapid toward the end of May in unsprayed apple orchards. Populations were economic on apples, and some peaches, throughout June, July and most of August. SCHOENE SPIDER MITE (*Tetranychus schoenei*) was sufficiently numerous in untreated apple orchards to attract attention about mid-July in Kent and Sussex Counties and continued moderately abundant throughout August.

Truck Crop Insects: TOMATO FRUITWORM (*Heliothis zea*) caused light injury on tomatoes, troublesome on pumpkin-squash and peppers in Kent and Sussex Counties during August and September, and to lima beans in Sussex County. EUROPEAN CORN BORER was moderate to heavy in potatoes locally in Kent and Sussex Counties, June and July, and to less extent in New Castle County. Infestations were heavy in pepper fruits, August and September, Kent and Sussex Counties, causing as much as 15 percent losses, and were light in lima beans, generally. ARMYWORM caused early, moderate injury to peas. IMPORTED CABBAGEWORM (*Pieris rapae*) was responsible for usual damage to all crucifers throughout Delaware. CABBAGE LOOPER (*Trichoplusia ni*) was more abundant and injurious than 1956 on all preferred hosts, including crucifers, tomatoes, potatoes and some pumpkin-squash. HORNWORMS (*Protoparce* spp.) was slightly more numerous than in 1956, causing light damage most places. FALL ARMYWORM was light in pepper fruits in Sussex County in September. GREEN CLOVERWORM was injurious on lima and snap beans, Kent and Sussex Counties, requiring some control in August. VELVETBEAN CATERPILLAR was light on limas and snap beans in southern Kent and Sussex Counties in September. GARDEN WEBWORM was abundant generally, but caused only light damage to lima beans and pepper fruits in Sussex County in September. PICKLEWORM (*Diaphania nitidalis*) was more common than usual in cucurbits in areas of Sussex County in October. SOUTHERN CABBAGEWORM (*Pieris protodice*) infested commercial mustard and turnip locally in Kent County during late October and early November. SQUASH VINE BORER (Mellitia cucurbitae) was somewhat more destructive than usual in Sussex County. ASPARAGUS BEETLE (Crioceris asparagi) occurred in usual abundance. AN INTRODUCED FLEA BEETLE (Phyllotreta cruciferae)was less numerous on crops generally than for several season. PALE-STRIPED FLEA BEETLE (Systena blanda) was troublesome on squash locally in New Castle County, and on lima beans in areas of Kent and Sussex Counties. POTATO FLEA BEETLE (Epitrix cucumeris) caused heavy injury on untreated potatoes throughout the State early in season, thereafter locally where rigid control not practiced. Most severe in Sussex County. TOBACCO FLEA BEETLE (Epitrix hirtipennis) was less common than in 1956, causing only light injury on tomatoes and potatoes. COLORADO POTATO BEETLE (Leptinotarsa decemlineata) was equallly as destructive to potatoes and tomatoes as in 1956. MEXICAN BEAN BEETLE (Epilachna varivestis) was less injurious at most places than in 1956. Heaviest infestation localized in Kent and Sussex Counties. BEAN LEAF BEETLE (Cerotoma trifurcata) was not a serious except on young snap beans early in the season in Sussex County. STRIPED CUCUMBER BEETLE (Acalymma vittata) was about normal and SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata howardi) was more prevalent than usual causing considerable injury, especially to cucurbits, beans and sweet corn. GOLDEN TORTOISE BEETLE (Metriona bicolor) was not especially injurious anywhere on sweetpotato. SQUASH BUGS (Anasa tristis and A.armigera) were of usual abundance in Kent and Sussex Counties. POTATO LEAFHOPPER became numerous and caused tipburn on potatoes in Kent and Sussex Counties by mid-June. Increased later on all types of beans. Economic population persisted throughout the season, especially in southern half of State. Somewhat more abundant than usual. GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) was abundant some places on untreated tomatoes and potatoes in New Castle and Kent Counties in August. A related species, Trialeurodes sp., was prevalent on beans, without causing apparent injury in areas of Kent and Sussex Counties. PEA APHID was responsible for moderate to severe damage to commercial peas over most of the State in late April to June, despite control. CABBAGE APHID (Brevicoryne brassicae) was locally destructive to cabbage, cauliflower and kale throughout the season,and more common than in 1956. POTATO APHID (Macrosiphum solanifolii caused some concern on tomatoes in Sussex County, generally much less common than in 1956. BEAN APHID (Aphis fabae) infestations ranged from light to abundant over the State, beginning in late June; most destructive to limas in Sussex County. MELON APHID (Aphis gossypii) was somewhat more numerous than usual on pumpkin-squash, but caused no more than moderate injury. TURNIP APHID (Rhopalosiphum pseudobrassicae) was present in limited numbers on cabbage, cauliflower and kale throughout the season; and increased on turnip in late summer and early fall, most areas. TARNISHED PLANT BUG was about as abundant and injurious on potatoes and beans as in 1956. ASPARAGUS MINER (Melanagromyza simplex) was more abundant throughout the State than for past several years, especially in well-established plantings. There was early yellowing of ferns associated with infestations, some of which were as heavy as 70 percent in northern area. LEAF MINERS (Liriomyza sp. and L. brassicae) - Former species occurred commonly in potatoes, generally. Also active in tomatoes, squash, pumpkin-squash and watermelon in Kent and Sussex Counties. Latter species prevalent in crucifer seedbeds and plantings of cabbage and cauliflower in Kent County. Both more abundant than in any preceding season since 1950. VINEGAR FLIES (Drosophila spp.) were abundant in tomato fields, Kent and Sussex Counties, August - September. TWO-SPOTTED SPIDER MITE (Tetranychus telarius) was a late pest on tomatoes in Kent and Sussex Counties, prevalent on lima and snap beans, generally. STRAWBERRY SPIDER MITE (Tetranychus atlanticus) was heavier than usual on lima beans throughout Kent and Sussex Counties, causing early foliage distortion and droppage; most severe in recent years. TOMATO RUSSET MITE (Vasates lycopersici) locally infested several fields in Kent and Sussex during August and September. Most extensive single infestation covered approximately one acre. SPOTTED GARDEN SLUG (Limax maximus) caused noticeable injury to beans, cabbage, cucurbits and other crops in some areas of New Castle and Kent Counties in September and October.

Forest, Ornamental and Shade Tree Insects: EASTERN TENT CATERPILLAR (Malacosoma americanum) was more abundant throughout the State, especially on wild cherry, than in any season since 1950, causing total defoliation at most places. NANTUCKET PINE MOTH (Rhyacionia frustrana) was responsible for considerable tip injury in loblolly and Virginia pine natural stands, and moderately severe damage to ornamentals, including red pine, over most of northern section of State. A PITCH TWIG MOTH (*Petrova virginiana*) was common in central Kent County, less so in State Forests in Sussex County, on Virginia pine. MOURNING-CLOAK BUTTERFLY (*Nymphalis antiopa*) severely defoliated ornamental elms some places in Sussex County by late May. FALL WEBWORM (*Hyphantria cunea*) was abundant in early and late summer, but persisted throughout the season, especially in Sussex County, on elm, walnut, hickory, boxelder and other trees. Generally, more numerous than in previous years. BAGWORM (*Thyridopteryx ephemeraeformis*) was more destrustive than usual most places on certain conifers, sycamore, oaks and other deciduous trees and shrubs. WEBWORMS (*Salebria afflictella* and *Tetralopha melanogrammos*) injured sweetgums throughout Delaware by late June. Damage to ornamentals was comparable to that of 1956 and 1955, but much less than in 1954. MIMOSA WEBWORM (*Homadaula albizziae*) activity was more apparent throughout the State than in 1956 on mimosa and honeylocust. WHITE-MARKED TUSSOCK MOTH (*Hemerocampa leucostigma*) fed extensively on sycamore in Kent County. SYCAMORE TUSSOCK MOTH (*Halisidota harrisii*) was a prominent defoliator throughout southern half of the State. WALNUT CATERPILLAR (*Datana integerrima*) caused partial to complete defoliation everywhere. YELLOW-NECKED CATERPILLAR (*Datana ministra*) was somewhat more abundant and destructive statewide than usual on oaks. A BEECH OECOPHORID (*Psilocorsis faginella*) was severe on beech in July in northern Delaware for the second consecutive year. A WITCH-HAZEL LEAF ROLLER (*Episimus argutanus*) caused extensive foliage damage in northern New Castle County in July. POPLAR TENTMAKER (*Ichthyura inclusa*) was unusually active on aspen and poplars over northern portion of the State. VARIABLE OAK LEAF CATERPILLAR (*Heterocampa manteo*) caused some local defoliation of oaks, but much less severe than in 1956. CATALPA SPHINX (*Ceratomia catalpae*) was more injurious than usual at certain locations in Sussex County. AZALEA LEAF MINER (*Gracilaria azalella*) attracted attention early in the season, especially at some places in northern Delaware. Not heretofore recognized as an economic pest in this State. EUROPEAN CORN BORER was heavy in dahlias at one location, New Castle County, late in season. ASIATIC OAK WEEVEL (*Cyrtepistomus castaneus*) - Prevalence of adults about normal. ELM LEAF BEETLE (*Galerucella xanthomelaena*) was not as numerous as in 1956, generally. JAPANESE BEETLE (*Popillia japonica*) adult emergence began early (June 9, Sussex County) and lasted well into September. More prevalent generally on a wide variety of ornamentals, shade trees and shrubs than for several years. Especially troublesome in new developmental areas. LOCUST LEAF MINER (*Chalepus dorsalis*) was moderately severe on black locust in New Castle and northern Kent Counties. SMALLER EUROPEAN ELM BARK BEETLE (*Scolytus multistriatus*) was a serious pest throughout the State. APHIDS (*Cinara* spp.) - None of three distinct species on Virginia and loblolly pines was numerous enough to warrant attention, in striking contrast with 1956. ELM LEAF APHID (*Myzocallis ulmifolii*) was common on some ornamental trees in Sussex County. PAINTED MAPLE APHID (*Drepanaphis acerifoliae*) was unusually abundant, especially on Norway maple late in season, causing leaf discoloration, and early foliage droppage. TULIPTREE APHID (*Macrosiphum liriodendri*) was common generally and did not cause serious injury. ROSE APHID (*Macrosiphum rosae*) infested buds and growing tips of hybrid roses in northern New Castle County. Damage and cocoons of *Retinodiplosis inopis* on Virginia pine were more noticeable than last season in Kent County, late April. *Retinodiplosis resinicola* increased on loblolly pine throughout Delaware in April and May, later causing loss of most infested branches. AN OAK PILL GALL (*Cincticornia pilulae*) was especially common on pin oak, and caused many inquiries in northern Delaware in early July. PINE SAWFLIES (*Neodiprion* spp.) Two species involved on Virginia and loblolly pines much less evident than last season, generally. SPRUCE SPIDER MITE (*Oligonychus ununguis*) infestations on various spruces, especially Colorado blue, were common throughout the State. AN OAK MITE (*Oligonychus bicolor*) affected various oaks, chiefly pin and willow, to same degree, generally in July and August. TWO-SPOTTED SPDER MITE was heavy on dahlias and other herbaceous ornamentals at most locations, late summer.

Insects Affecting Man and Animals: BLACK FLIES (*Prosimulium hirtipes* in northern section and *Cnephia mutata* in southern sections) were abundant and annoying to man in early April. DEER FLIES (*Chrysops* spp.) were unusually numerous and annoying to man in most wooded areas and marshes in July. HOUSE FLY (*Musca domestica*) was more troublesome everywhere than 1956. SALT-MARSH MOSQUITO (*Aedes sollicitans*) was much less numerous than in 1956; other mosquitoes about normal. TERMITES (*Reticulitermes* spp.) remained serious pests throughout the State. ORIENTAL COCKROACH (*Blatta orientalis*) - Fewer infestations recorded than in previous years. BOXELDER BUG (*Leptocoris trivittatus*) was annoying in and about homes of several residents in central area in October. WAX MOTHS (*Galleria mellonella* and *Achroia grisella*) heavily infested bee colonies, one apiary in New Castle County. Destructive generally. AMERICAN DOG TICK (*Dermacentor variablis*) occurred in usual numbers. BLACK WIDOW SPIDER (*Latrodectus mactans*) was more troublesome than for past several years, especially to residents in new developmental areas in northern Delaware. MILLIPEDES entered many dwellings in New Castle County during September and October.

Miscellaneous: CARROT BEETLE (*Ligyrus gibbosus*) - Large number adults in and on soil surrounding sunflowers at one location in Sussex County, late August.

Beet Leafhopper Population in Nevada, Utah and Western Colorado - 1957.

A February study of the approximately 50,000 square mile potential beet leafhopper breeding grounds of southeastern California, southern and western Arizona, southern Nevada and southern Utah showed host plants present in approximately 14 percent of the area. The leafhopper population in this area averaged 0.002 per square foot with approximately 3 percent viruliferous. It was estimated 158.07 million infective leafhoppers were present in the breeding grounds in early February prior to the first brood. In contrast, 7,206.5 million leafhoppers were estimated present in 1952, a year of moderate damage. The March study of approximately 75 square miles potential breeding grounds of the northern Utah, eastern Utah and western Colorado showed host plants present in 50 percent of the area. The leafhopper overwintering population averaged 0.22 per square foot and approximately 4.5 percent were viruliferous. It was estimated 9.5 million infective leafhoppers overwintered in these areas. In 1956, 33.08 million leafhoppers were estimated to have overwintered.

Based on the February study, the following statement was published February, 15 on the beet leafhopper outlook for 1957: "Beet leafhopper spring movement from the southern desert breeding grounds to the cultivated districts of north and south central Utah and western Colorado is expected to be light. The movement to southern Utah, southern Nevada and central Arizona is expected to be moderate. The local movement from the breeding grounds of northern and eastern Utah to the adjacent cultivated districts of northern Utah and western Colorado is expected to be light to moderate."

A second statement was published April 10 confirming the first outlook statement with the following summary: "A light movement of beet leafhopper is anticipated in all of the agricultural areas of Arizona, Nevada, Utah and western Colorado in 1957. Little damage is expected to sugar beets, tomatoes, beans and cantaloups except possibly in southern Utah."

The mid-April movement of beet leafhopper to tomato seedlings in southern Nevada was light and averaged about 0.5 leafhoppers per square foot. In 1955, the population in tomato seedlings averaged 2.5 per square foot. The movements to early market tomatoes in southern Utah in April and again in May were moderate and resulted in about 35 percent curly top damage. The migration to northern Utah and western Colorado was first detected in late April and reached its peak by mid-May. Sugar beets in south central Utah showed a light leafhopper population of 0.03 per square foot of beet row. The movement could not be traced north of Payson, Utah or to western Colorado. In 1952, the corresponding population on beets averaged 3.60 per foot. Curly top showed only a trace in the southern sugar beet growing district in 1957. No traces of the long distance migration could be detected in the northwestern Nevada beet growing area. The local leafhopper movement in northern Utah was first detected on June 5 and reached its peak by June 13. Sugar beets in northern Utah had a leafhopper population ranging from 0.04 to 0.16 per foot of beet row with an average of 0.09 per foot as a result of the local movement. Tomatoes grown for canning purposes showed an average of only 3 percent curly top in northern Utah after being exposed to this movement.

In western Colorado, the local movement of the beet leafhopper produced a light population on sugar beets averaging about 0.23 per foot of beet row by mid-June. Only a trace of curly top was detectable there on tomatoes and sugar beets.

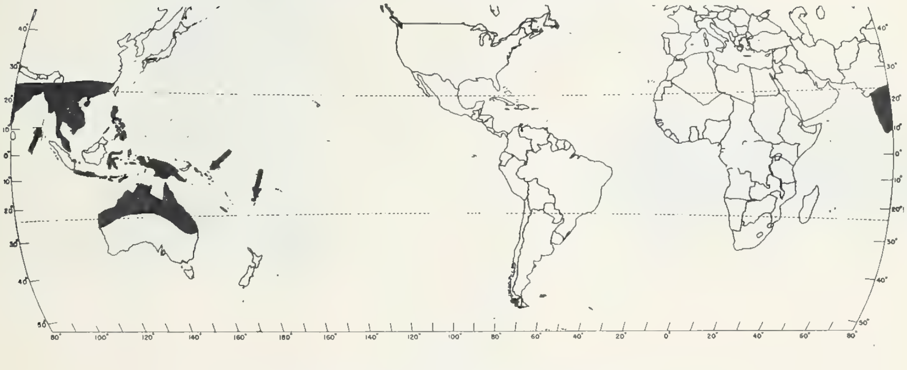
The fall beet leafhopper movement from the Russian thistle areas of Escalante Desert of southern Utah and south central Nevada and Wolf Hole area of Northwestern Arizona occurred the last week of September and was approximately one week earlier than in 1956. The leafhopper population on young seedling sugar beets being grown for seed averages 1.3 in southern Utah and 2.0 per square foot of beet row in southern Nevada. This population was about three times larger in the southern Utah area and five times larger in the southern Nevada area than in 1956. Summer precipitation maintained good host plant conditions adjacent to the cultivated districts and therefore the movement was directly to the beets. This movement was about ten times larger than in 1956.

Precipitation in the fall of 1957 was sufficient to germinate host plants for the leafhopper to overwinter in both the northern and southern breeding grounds. These conditions are more favorable for sustaining a higher overwintering population than has been experienced since 1952 and 1940. (H. E. Dorst).

BUFFALO FLY (*Siphona exigua* (De Meijere))

Economic Importance: This muscid causes serious damage to cattle in areas of the *Oriental* region, South Seas and Australia by its constant irritation and annoyance. Greatest damage is largely restricted to areas of 20 inches annual rainfall. The pest has often been compared with the horn fly (*Siphona irritans*) in North America relative to its potential damage in reducing weight and milk production when infestations are severe. Apparently animals suffer most when attacked for the first time. Cattle from infested areas can be readily recognized by the large raw areas around the eyes and on the body that are formed from scratching and rubbing of the animal. Such wounds are attractive to the injurious bush fly (*Musca sorbens*)* in Australia. As a rule, populations of up to 1000 per animal are usually tolerated without much injury, although two or three thousand per animal is considered a serious infestation. In the Indo-Malayan Archipelago, surra disease (*Trypanosoma evansi*) and anthrax are considered to be transmitted by this species.

Buffalo Fly Sores on a Cow



General Distribution of Buffalo Fly

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*Also known as *Musca vetustissima*

Distribution: Generally distributed throughout the Oriental region, being recorded in China, Indochina, Malaya, India, Indonesia (Java, Celebes and the lesser Sundra Islands), Philippines, Australia, New Guinea, Andaman Islands, Guadalcanal, Russell Islands, Fiji, Solomon Islands and Micronesia.

Hosts: Attacks cattle and buffalo usually, but frequently will attack horses, mules and donkeys. Man, sheep, hogs and dogs are attacked when they are associated with preferred hosts.

Life History and Habits: Adults of both sexes are blood-suckers, living only where bovine hosts occur. Feeding and breeding habits are very similar to Siphona irritans. When feeding, the adult crawls within the hair and thrusts its head to the skin surface so that its body is at an angle. When at rest the wings are held at an angle from the body except when conditions are cool, then they are held flat along the back in scissors-fashion. The fly is almost entirely ectoparasitic, in that it rarely leaves the host, except to oviposit, transfer to another host, or following a disturbance. Adults are found in greatest numbers around the withers and shoulders and on the flanks. Bulls are usually most heavily infested. The female deposits up to 20 eggs in fresh dung. Under favorable conditions eggs hatch in 18 to 24 hours. The larva completes growth in 3 to 5 days under summer conditions with optimum moisture content in dung being about 68 percent. Pupation takes place in the bottom layers of the dung and lasts about 3 to 5 days, thus under normal conditions the life cyle requires from 7 to 11 days. The winter cycle is prolonged to 46 days or more, therefore maximum populations occur during late summer and early autumn, immediately following the summer rains.

Description: Adult is small, measuring 3.5 to 4 mm. The face is silvery-gray, proboscis dark and porrect; the palpi yellowish, stout, uniformly broad, and as long as the proboscis. Thorax is silver-gray medianly, darker laterally, with two well-defined dark stripes. The abdomen is brownish with a median longitudinal stripe, less conspicuous toward the apex. The legs usually yellowish. The wing veins R 4+5 and M 1 curve gently towards one another near the wing margin. Egg is somewhat sausage-shaped, creamy to brownish and about 1 mm. in length. Larva is typical of Diptera and measures up to 10 mm., usually 6 mm., when fully grown. Puparium is typically hard, barrel-shaped, brown, and about 3 mm. in length. (Prepared in Plant Pest Survey Section in cooperation with other ARS agencies.)

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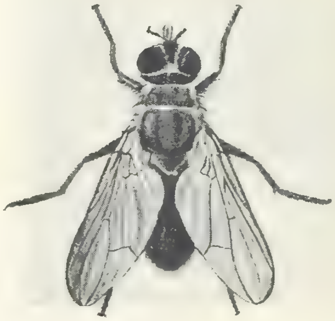

Larva and Adult of Siphona exigua

Figures (except map) from Roberts, F. H. S. 1952. Insects Affecting Livestock. 267 pp. Sydney.